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FOREST STATISTICS FOR
SOUTHWEST ARKANSAS

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A REPORT OF THE SOUTHERN FOREST SURVEY
William A. Duerr, In charge

SOUTHERN FOREST EXPERIMENT STATION
Chas. A. Connaughton, Director
New Orleans, La.
FOREST SERVICE, U.S. DEPT. OF AGRICULTURE

AGRIC., UPTON PTG. CO., N.O.

THE SOUTHERN FOREST SURVEY

The Southern Forest Survey, an activity of the Southern Forest Experiment Station, covers the seven States of the Station's territory--Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas. This Survey is a part of the nation-wide Forest Survey authorized by the McSweeney-McNary Forest Research Act of 1928. Its fivefold purpose is (1) to take inventory of the supply of standing timber and other forest products; (2) to ascertain the rate at which this supply is being increased through growth; (3) to determine the rate at which this supply is being diminished through industrial and local use, and by fire, insects, disease, and other agencies; (4) to estimate the present requirements and the probable future trend in the requirements for timber and other forest products; and (5) to correlate these findings with existing and anticipated economic conditions, in order that policies may be formulated for the effective use of lands suitable for forest production.

FOREST STATISTICS FOR
SOUTHWEST ARKANSAS

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Figure I.--Southwest Arkansas in relation to the other Forest Survey regions in the State.

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The loblolly-shortleaf pine type in southwest Arkansas includes a third of the total forest. Here is one of the more productive, managed stands in this type. Now 48 years old, it has been thinned twice but still contains 170 crop trees per acre.

FOREST STATISTICS FOR SOUTHWEST ARKANSAS

This publication summarizes the data on forest acreage and timber volume collected by the Southern Forest Survey in the 20 counties of southwest Arkansas (fig. 1) in 1949. This is the second Forest Survey of the area; the first was made in 1936.

Southwest Arkansas is predominantly a forest region. Seventy-one percent of its 8.9 million acres is commercial forest land; a major part of its economic activity is the extraction and processing of timber products. A graphic description of the forest resource will be found on the two pages immediately following.

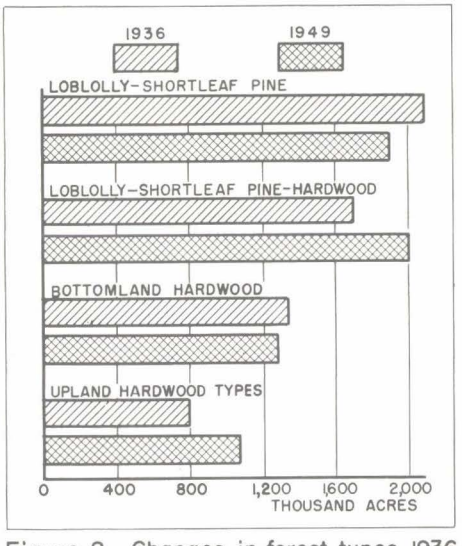


Figure 2--Changes in forest types, 1936-49

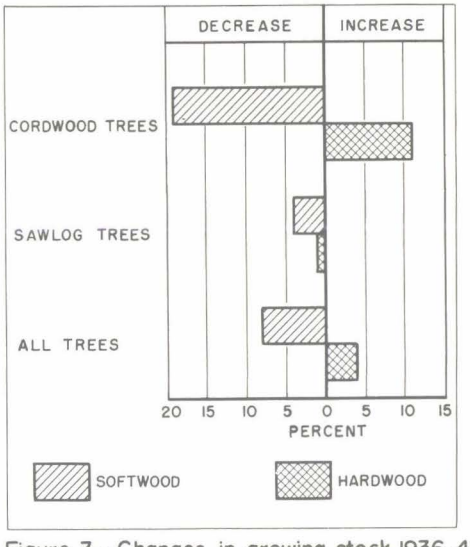


Figure 3--Changes in growing stock, 1936-49

In the 13 years between the two Forest Surveys, forest-land acreage increased 6 percent, mainly because of farm-land abandonment. While the forests were spreading, they were also changing in species composition and timber volume. In general, softwood (mainly pine) decreased in extent and quantity, while hardwood increased. Heavy cutting of pine and vigorous growth of hardwood were among the causes. Important is the fact that owners of perhaps a third of the forest are managing their land so as to build up timber stocking, especially of pine; but that on the remaining bulk of the forest, poor management and timber deterioration are still the rule. Here are some of the net effects of these conditions:

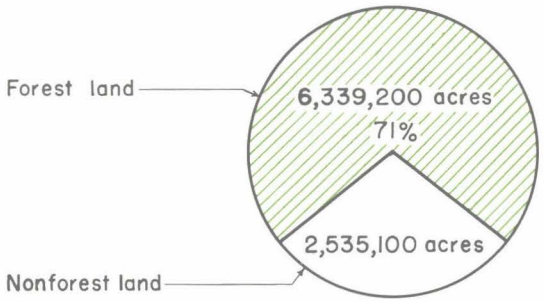
In the 13 years between the Surveys, the acreage classed as pine forest decreased 9 percent; pine-hardwood increased 20 percent; upland hardwood forests increased 35 percent (fig. 2).

In total growing stock, the 2.6 billion cubic feet of softwood represents an 8 percent drop since 1936. Hardwood, totaling 2.0 billion cubic feet, is up 4 percent by virtue of heavy increases in small trees (fig. 3).

FOREST ACREAGE—1949

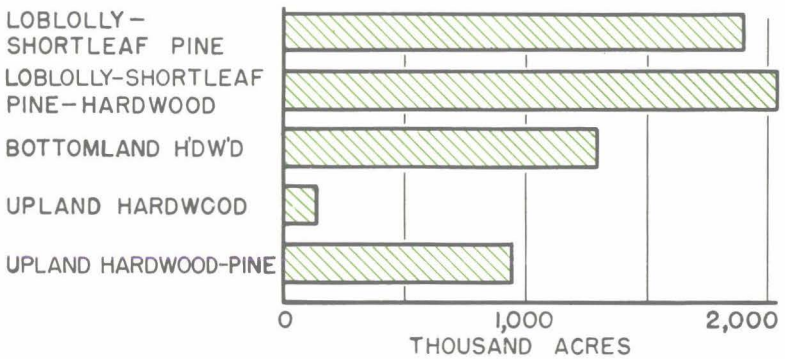
FOREST LAND

Over 70 percent of the land in southwest Arkansas is forested. Ninety-eight percent of the forest is privately owned.



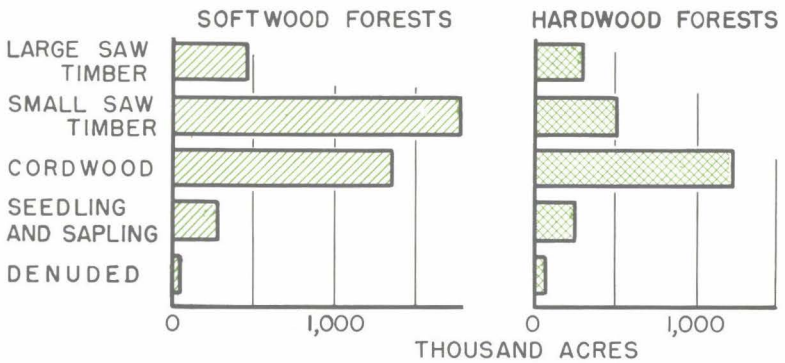
FOREST TYPE

Softwood types comprise 62 percent of the forest land.



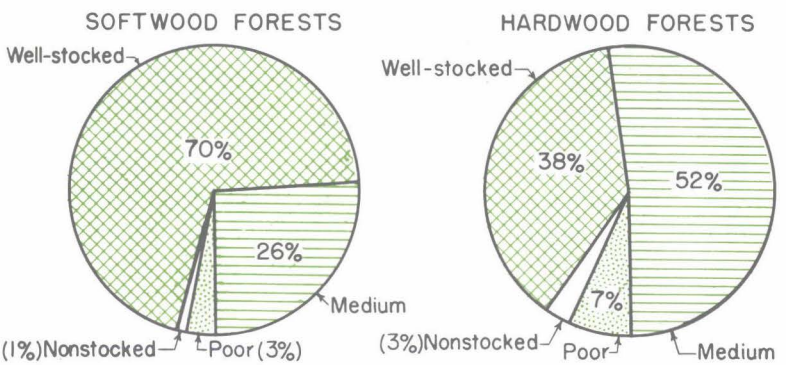
STAND SIZE

Small saw timber stands predominate in the softwood types; cordwood stands predominate in the hardwood types.



FOREST STOCKING

Considering all well formed trees, including established seedlings, softwood types are generally well stocked. Hardwood types are less well stocked.



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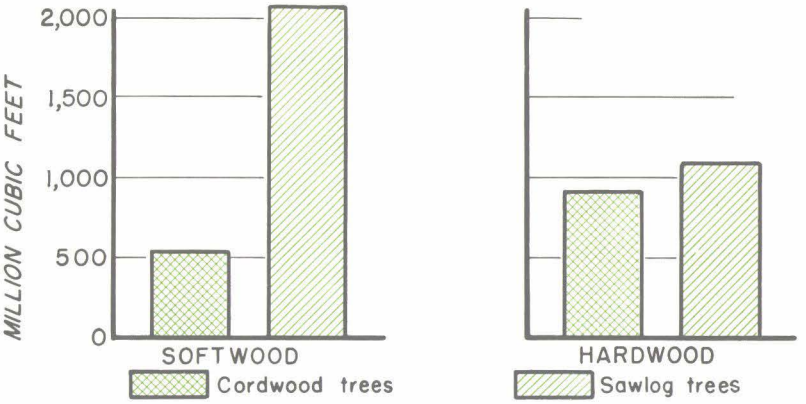
TIMBER VOLUME — 1949

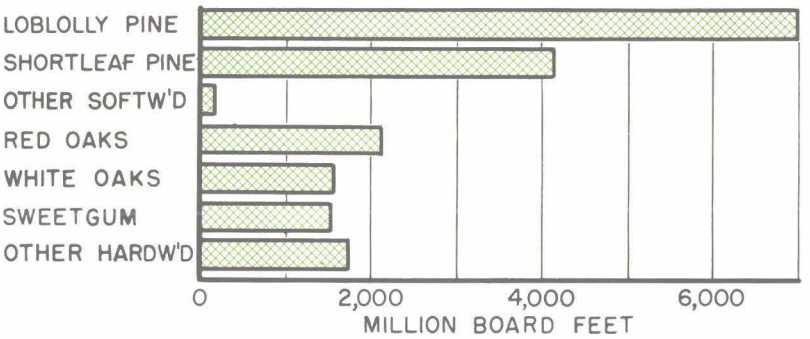
TOTAL GROWING STOCK

Sawlog trees make up 80 percent of the 2.6 billion cubic feet of softwood growing stock, 54 percent of the 2.0 billion cubic feet of hardwood growing stock.



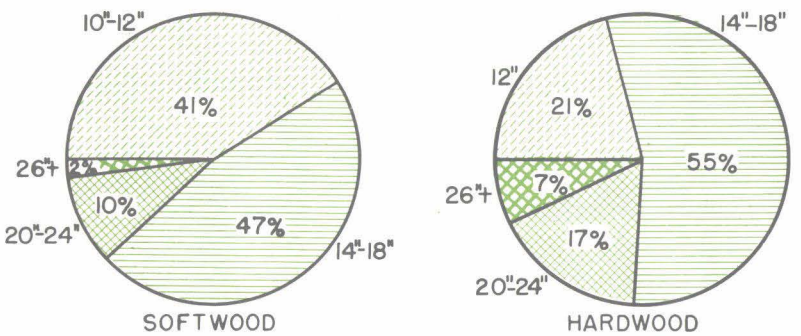
SAWLOG VOLUME BY SPECIES GROUP

Loblolly pine comprises 38 percent of the total sawlog volume; shortleaf pine, 23 percent.



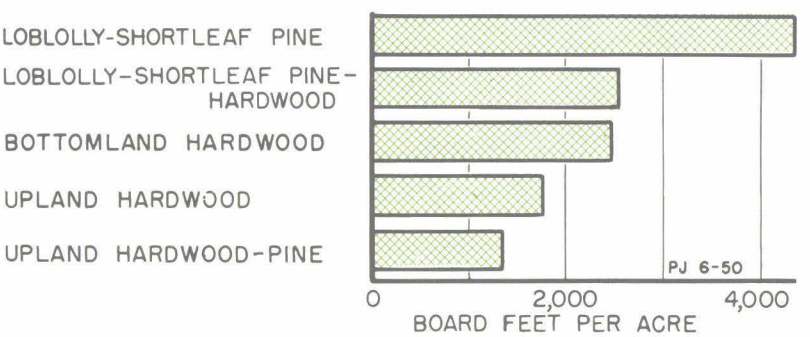
SAWLOG VOLUME BY TREE DIAMETER

Eighty-eight percent of the softwood sawlog volume and 75 percent of the hardwood is in trees under 20 inches d.b.h.



SAWLOG VOLUME PER ACRE BY FOREST TYPE

The loblolly-shortleaf pine type averages 4,356 board feet to the acre, by far the most for any type.



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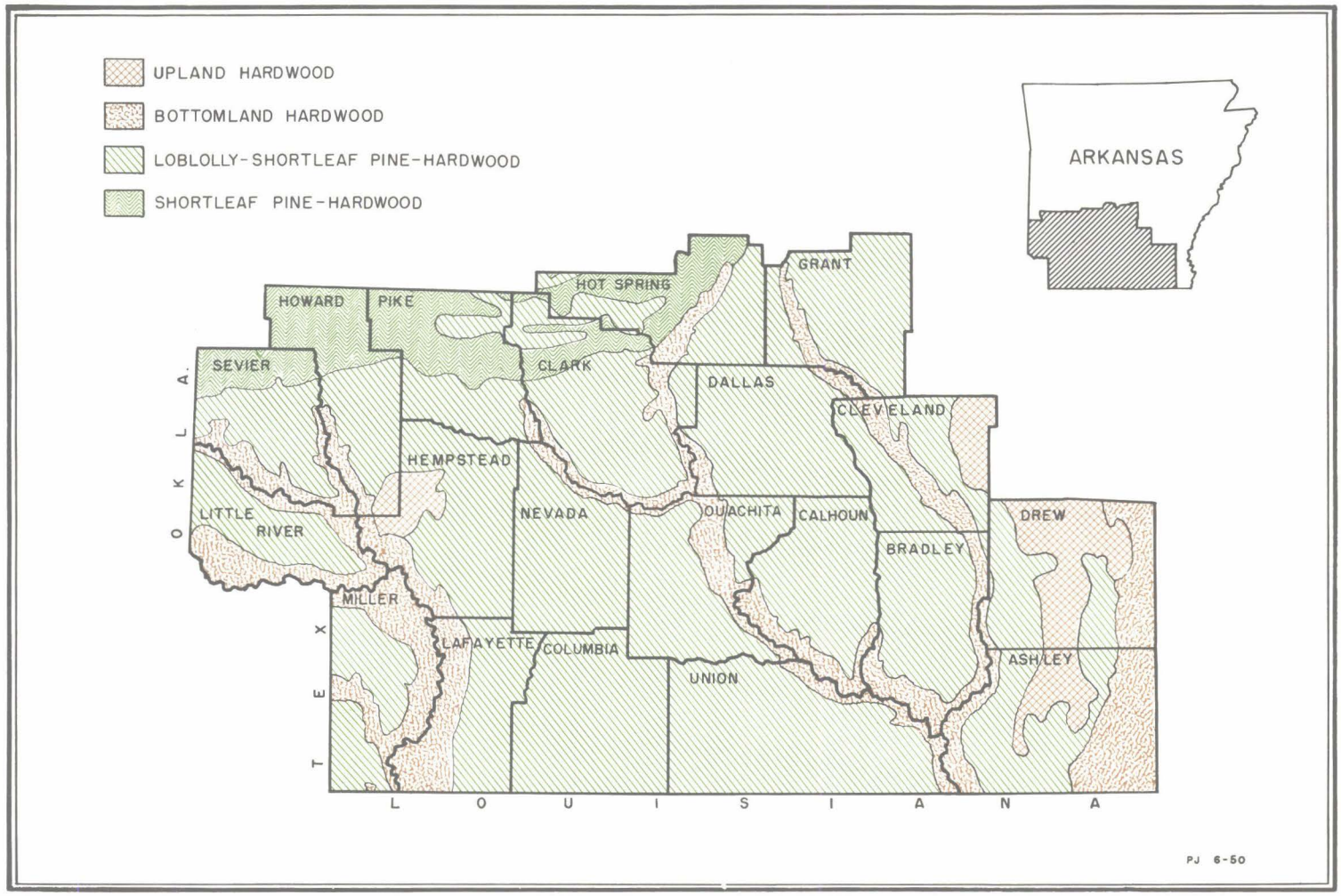

Figure 4.--Generalized forest types in southwest Arkansas. The pure pine and upland hardwood-pine types are not shown.

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In sawlog growing stock, both softwood and hardwood declined 2 percent between the Forest Surveys. The 1949 saw-timber volumes are 11.3 and 6.9 billion board feet, respectively.

Before determining changes in the forest between 1936 and 1949, it was necessary to put the data from the first inventory on a basis comparable with the reinventory. For example, between the two Forest Surveys, the official land-area statistics for Arkansas were changed; the boundaries of the southwest region were shifted onto county lines; and the lower limit for hardwood saw timber was dropped from 13.0 to 11.0 inches, d.b.h.

Definitions of terms used in this report will be found in the appendix.

Accuracy of the Data

Data were obtained from a sampling of aerial photographs and from on-the-ground measurements on pairs of quarter-acre sample plots located every 4 miles on lines 3 miles apart throughout the region. Statistical analysis of the data indicates a sampling error of about 1 percent for the estimate of total forest acreage, 3 percent for total cubic-foot volume, and 4 percent for total board-foot volume. As these totals are broken down by forest type, species, and other subdivisions, the error possibility increases and is greatest for the smallest items.

The maximum sampling error to which the estimates are liable, on a probability of two out of three, is approximately as follows:

Maximum sampling error in forest area		Maximum sampling error in cubic-foot volume		Maximum sampling error in board-foot volume	
Thousand acres	Percent error	Million cu. ft.	Percent error	Million bd. ft.	Percent error
6,000	1	4,600	3	18,000	4
3,000	1	2,500	4	10,000	5
1,000	2	1,000	6	4,000	8
500	3	300	11	1,000	15
50	9	30	36	100	49

The estimates of sampling error do not include errors in volume tables, cull allowances, or other such measurements. Methods of estimating errors of this type have not been developed.

Table 1.--Forest and nonforest land area, 1949

Land use	Land area	
	Thousand acres	Percent
Forest:[1]		
Commercial	6,339.2	71.4
Reserved-commercial	...	...
Noncommercial	...	...
Total	6,339.2	71.4
Nonforest	2,535.1	28.6
All land	8,874.3	100.0

1/ No forest land was found that was incapable of producing commercial timber.

Table 2.--Forest land by class of ownership, 1949

Class of ownership	Commercial forest	
	Thousand acres	Percent
Private:		
Farm[1]	1,224.5	19.3
Other	5,010.5	79.1
Total private	6,235.0	98.4
Public:		
National forest	4.0	.1
Soil Conservation Service	19.1	.3
Other federal	55.1	.8
State	.3	(2/)
County	25.7	.4
Total public	104.2	1.6
All ownership	6,339.2	100.0

1/ Based on 1945 Census of Agriculture.
2/ Negligible.

Table 3.--Land area and commercial forest by county, 1949[1/]

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Ashley	597.2	430.1	72.0
Bradley	415.4	329.8	79.4
Calhoun	401.9	333.1	82.9
Clark	562.0	400.9	71.3
Cleveland	384.6	279.4	72.6
Columbia	491.5	308.5	62.8
Dallas	430.1	355.0	82.5
Drew	535.0	385.0	72.0
Grant	403.8	325.3	80.6
Hempstead	470.4	261.0	55.5
Hot Spring	397.4	306.8	77.2
Howard	384.0	271.7	70.8
Lafayette	343.7	235.8	68.6
Little River	348.2	229.6	65.9
Miller	401.3	251.3	62.6
Nevada	394.2	232.4	59.0
Ouachita	472.3	344.1	72.9
Pike	393.6	305.6	77.6
Sevier	374.4	268.3	71.7
Union	673.3	485.5	72.1
All counties	8,874.3	6,339.2	71.4

1/ County data on sawlog and total growing stock, suitable for combining into county groups, are available as a supplement to this release.

Table 4.--Commercial forest land by stand size and forest type, 1949

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
			Thousand acres			
Softwood types:						
Loblolly-shortleaf pine	1,903.8	244.7	1,010.9	454.0	160.0	34.2
Loblolly-shortleaf pine-hardwood	2,052.6	222.1	779.3	913.6	123.5	14.1
Total	3,956.4	466.8	1,790.2	1,367.6	283.5	48.3
Hardwood types:						
Bottomland hardwood	1,300.7	243.7	365.0	531.7	131.2	29.1
Upland hardwood	138.2	13.9	31.1	79.7	6.8	6.7
Upland hardwood-pine	943.9	60.3	116.0	622.8	118.2	26.6
Total	2,382.8	317.9	512.1	1,234.2	256.2	62.4
All types	6,339.2	784.7	2,302.3	2,601.8	539.7	110.7

Table 5.--Commercial forest land by degree of tree stocking and forest type, 1949

Forest type	All stocking	Well stocked	Medium stocked	Poorly stocked	Non-stocked
		Thousand acres			
Softwood types:					
Loblolly-shortleaf pine	1,903.8	1,417.8	381.2	70.6	34.2
Loblolly-shortleaf pine-hardwood	2,052.6	1,345.5	640.3	52.7	14.1
Total	3,956.4	2,763.3	1,021.5	123.3	48.3
Hardwood types:					
Bottomland hardwood	1,300.7	484.0	675.5	112.1	29.1
Upland hardwood	138.2	48.5	76.1	6.9	6.7
Upland hardwood-pine	943.9	377.2	489.5	50.6	26.6
Total	2,382.8	909.7	1,241.1	169.6	62.4
All types	6,339.2	3,673.0	2,262.6	292.9	110.7

Table 6.--Area of saw-timber stands by stand quality and forest types, 1949

Forest type	All qualities	Fair or better	Poor
		Thousand acres	
Softwood types:			
Loblolly-shortleaf pine	1,255.6	626.0	629.6
Loblolly-shortleaf pine-hardwood	1,001.4	401.9	599.5
Total	2,257.0	1,027.9	1,229.1
Hardwood types:			
Bottomland hardwood	608.7	246.4	362.3
Upland hardwood	45.0	20.8	24.2
Upland hardwood-pine	176.3	64.2	112.1
Total	830.0	331.4	498.6
All types	3,087.0	1,359.3	1,727.7

Table 7.--Basal area per acre of growing stock[1/] and cull trees by forest-type group, 1949

Forest-type group	All trees	Growing stock	Cull trees
		Square feet	
Softwood	71.8	62.7	9.1
Bottomland hardwood	70.9	47.7	23.2
Upland hardwood 2/	56.6	42.8	13.8
All types	69.0	56.2	12.8

1/ Includes sound, well-formed 2- and 4-inch trees.
2/ Includes upland hardwood-pine.

Table 8.--Distribution of total growing stock by species within each forest type, 1949

Species	All types 1/	Loblolly-shortleaf pine	Loblolly-shortleaf pine-hardwood	Bottomland hardwood	Upland hardwood	Upland hardwood-pine
	Percent					
Softwood:						
Loblolly pine	32.7	47.4	36.6	3.9	...	7.6
Shortleaf pine	22.8	40.2	16.8	(2/)	...	4.0
Cypress	.8	(2/)	.1	4.7	...	...
Cedar	(2/)	(2/)	(2/)	...	...	(2/)
Total	56.3	87.6	53.5	8.6	...	11.6
Hardwood:						
Southern red, black, and scarlet oaks	6.3	3.0	10.7	0.7	19.7	16.6
Cherrybark, Shumard, and northern red oaks	1.7	.5	1.7	3.0	12.6	3.9
Water oaks	4.6	.5	3.5	17.2	6.3	4.2
White oak	4.1	1.5	6.8	1.8	14.1	10.7
Other white oaks	5.9	2.3	7.5	8.0	17.6	11.7
Sweetgum	10.1	2.7	8.0	29.0	11.4	18.7
Black and tupelo gums	2.5	.7	2.8	5.1	1.7	5.2
Cottonwood	.1	...	...	.5	...	...
Willow	.4	...	.1	1.9	...	...
Pecan	.4	...	...	2.6	(2/)	(2/)
Other hickories	3.2	.9	3.4	4.6	9.9	9.8
Elms	1.6	.2	.6	6.0	5.1	2.3
Maples	.5	(2/)	.4	1.0	...	1.7
Yellow-poplar	(2/)	...	...	...	...	(2/)
Sycamore	.3	...	(2/)	1.6	...	.5
Ash	.5	.1	.3	1.8	.8	1.1
Beech	.3	(2/)	.3	.7	...	1.5
Sweet bay and magnolia	.1	...	.2	.5	...	(2/)
Hackberry	.4	...	(2/)	2.1	...	.1
Other hardwoods	.7	(2/)	.2	3.3	.8	.4
Total	43.7	12.4	46.5	91.4	100.0	88.4
All species	100.0	100.0	100.0	100.0	100.0	100.0

1/ Cedar type included.
2/ Negligible.

Table 9.--Total growing stock and sawlog volume by species, 1949

Species	Total growing stock	Sawlog volume
	Million cubic feet	Million board feet
Softwood:		
Loblolly pine	1,510.1	6,985.4
Shortleaf pine	1,051.4	4,133.7
Cypress	37.1	180.1
Cedar	.4	.6
Total	2,599.0	11,299.8
Hardwood:		
Southern red, black, and scarlet oaks	290.9	903.3
Cherrybark, Shumard, and northern red oaks	79.5	337.0
Water oaks	212.8	878.4
White oak	190.3	674.1
Other white oaks	270.7	883.9
Sweetgum	470.1	1,525.2
Black and tupelo gums	113.1	470.6
Cottonwood	4.1	13.4
Willow	16.2	66.9
Pecan	20.0	91.1
Other hickories	147.0	506.3
Elms	71.9	193.3
Maples	21.1	56.7
Yellow-poplar	.2	...
Sycamore	14.9	66.6
Ash	23.8	75.8
Beech	15.0	63.0
Sweet bay and magnolia	6.4	12.8
Hackberry	17.1	50.5
Other hardwoods	31.0	69.6
Total	2,016.1	6,938.5
All species	4,615.1	18,238.3

Table 10.--Total volume by class of timber and species, 1949

Species	All timber	Growing stock			Cordwood trees	Tops and limbs	Cull trees
		All trees	Sawlog trees				
			Sawlog portions	Tops			
	Million cubic feet						
Softwood:							
Lob'ly pine	1,520.6	1,510.1	1,136.0	130.2	243.9	...	10.5
Shortl. pine	1,054.6	1,051.4	691.4	76.4	283.6	...	3.2
Other softw.	40.1	37.5	29.5	3.8	4.2	...	2.6
Total	2,615.3	2,599.0	1,856.9	210.4	531.7	...	16.3
Hardwood:							
Red oaks	1,039.3	583.2	334.3	...	248.9	197.2	258.9
White oaks	767.2	461.0	244.9	...	216.1	156.8	149.4
Hickories	238.6	147.0	78.6	...	68.4	48.1	43.5
Sweetgum	692.2	470.1	242.0	...	228.1	118.3	103.8
Black & tupelo gums	216.8	113.1	73.3	...	39.8	40.8	62.9
Other hardwood	566.3	241.7	120.8	...	120.9	72.3	252.3
Total	3,520.4	2,016.1	1,093.9	...	922.2	633.5	870.8
All species	6,135.7	4,615.1	2,950.8	210.4	1,453.9	633.5	887.1
	Thousand cords						
Softwood:							
Lob'ly pine	20,274.7	20,134.7	15,146.7	1,736.0	3,252.0	...	140.0
Shortl. pine	14,061.3	14,018.6	9,218.6	1,018.7	3,781.3	...	42.7
Other softw.	534.7	500.0	393.3	50.7	56.0	...	34.7
Total	34,870.7	34,653.3	24,758.6	2,805.4	7,089.3	...	217.4
Hardwood:							
Red oaks	15,511.9	8,704.4	4,989.5	...	3,714.9	2,943.3	3,864.2
White oaks	11,450.7	6,880.5	3,655.2	...	3,225.3	2,340.3	2,229.9
Hickories	3,561.2	2,194.0	1,173.1	...	1,020.9	717.9	649.3
Sweetgum	10,331.3	7,016.4	3,611.9	...	3,404.5	1,765.7	1,549.2
Black & tupelo gums	3,235.8	1,688.0	1,094.0	...	594.0	609.0	938.8
Other hardwood	8,452.2	3,607.5	1,803.0	...	1,804.5	1,079.1	3,765.6
Total	52,543.1	30,090.8	16,326.7	...	13,764.1	9,455.3	12,997.0
All species	87,413.8	64,744.1	41,085.3	2,805.4	20,853.4	9,455.3	13,214.4

Table 11.--Total growing stock by species and stand size, 1949

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Million cubic feet					
Softwood:						
Loblolly pine	1,510.1	428.7	862.2	207.9	10.8	0.5
Shortleaf pine	1,051.4	165.8	727.0	154.5	3.9	.2
Other softwoods	37.5	19.0	11.8	6.5	.2	...
Total	2,599.0	613.5	1,601.0	368.9	14.9	.7
Hardwood:						
Red oaks	583.2	136.5	264.1	178.1	4.5	...
White oaks	461.0	85.8	196.2	172.0	5.8	1.2
Hickories	147.0	31.4	57.9	56.6	.7	.4
Sweetgum	470.1	95.1	205.3	163.3	6.4	...
Black and tupelo gums	113.1	37.7	49.5	24.7	1.2	...
Other hardwoods	241.7	59.4	86.8	91.0	3.4	1.1
Total	2,016.1	445.9	859.8	685.7	22.0	2.7
All species	4,615.1	1,059.4	2,460.8	1,054.6	36.9	3.4

Table 12.--Average volume per acre of total growing stock by stand size and forest type, 1949

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Cubic feet					
Softwood types:						
Loblolly-shortleaf pine	1,051	1,864	1,307	469	58	15
Loblolly-shortleaf pine-hardwood	666	1,336	921	376	66	...
Total	851	1,613	1,139	407	61	10
Hardwood types:						
Bottomland hardwood	594	969	841	411	63	82
Upland hardwood	481	1,036	672	388	...	45
Upland hardw.-pine	433	925	802	399	95	8
Total	524	964	822	403	76	46
All types	728	1,350	1,069	405	68	31

Table 13.--Sawlog volume by species and tree diameter, 1949

Species	All diameter classes	10 - 12 inches 1/	14 - 18 inches	20 - 24 inches	26 inches and up
	Million board feet				
Softwood:					
Loblolly pine	6,985.4	2,477.1	3,401.2	929.4	177.7
Shortleaf pine	4,133.7	2,099.7	1,893.7	140.3	...
Other softwoods	180.7	33.3	87.6	34.6	25.2
Total	11,299.8	4,610.1	5,382.5	1,104.3	202.9
Hardwood:					
Red oaks	2,118.7	458.7	1,123.5	406.6	129.9
White oaks	1,558.0	310.3	824.1	307.7	115.9
Hickories	506.3	97.4	282.8	62.4	63.7
Sweetgum	1,525.2	365.5	910.2	184.2	65.3
Black and tupelo gums	470.6	67.0	227.7	134.3	41.6
Other hardwoods	759.7	176.8	393.3	116.0	73.6
Total	6,938.5	1,475.7	3,761.6	1,211.2	490.0
All species	18,238.3	6,085.8	9,144.1	2,315.5	692.9

1/ Hardwood sawlog volume not tallied in trees under 11.0 inches d.b.h.

Table 14.--Sawlog volume by species and stand size, 1949

Species	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Million board feet					
Softwood:						
Loblolly pine	6,985.4	2,400.9	3,958.1	584.7	31.7	...
Shortleaf pine	4,133.7	866.4	2,942.5	312.9	11.9	...
Other softwoods	180.7	102.7	47.6	29.5	.9	...
Total	11,299.8	3,370.0	6,958.2	927.1	44.5	...
Hardwood:						
Red oaks	2,118.7	632.0	1,056.1	416.1	14.5	...
White oaks	1,558.0	412.6	674.8	449.1	14.4	7.1
Hickories	506.3	165.7	199.5	137.6	1.5	2.0
Sweetgum	1,525.2	409.2	773.8	326.9	15.3	...
Black and tupelo gums	470.6	194.3	192.1	80.5	3.7	...
Other hardwoods	759.7	289.3	287.8	172.6	3.9	6.1
Total	6,938.5	2,103.1	3,184.1	1,582.8	53.3	15.2
All species	18,238.3	5,473.1	10,142.3	2,509.9	97.8	15.2

Table 15.--Sawlog volume by species, softwood tree grade, hardwood log grade, and stand quality, 1949

Species	All grades	Grade 1	Grade 2	Grade 3	
				In fair and better stands	In poor stands
	Million board feet				
Softwood:					
Loblolly pine	6,985.4	1,348.2	1,732.4	1,608.8	2,296.0
Shortleaf pine	4,133.7	768.9	1,128.5	863.2	1,373.1
Other softwoods	180.7	104.1	31.8	15.5	29.3
Total	11,299.8	2,221.2	2,892.7	2,487.5	3,698.4
Hardwood:					
Red oaks	2,118.7	108.1	351.7	602.2	1,056.7
White oaks	1,558.0	116.8	324.1	394.3	722.8
Hickories	506.3	36.5	126.1	164.6	179.1
Sweetgum	1,525.2	54.9	178.4	366.9	925.0
Black and tupelo gums	470.6	69.6	124.7	144.8	131.5
Other hardwoods	759.7	50.9	154.2	198.5	356.1
Total	6,938.5	436.8	1,259.2	1,871.3	3,371.2
All species	18,238.3	2,658.0	4,151.9	4,358.8	7,069.6

Table 16.--Average sawlog volume per acre by stand size and forest type, 1949

Forest type	All stand sizes	Large saw timber	Small saw timber	Cordwood	Seedling and sapling	Denuded
	Board feet					
Softwood types:						
Loblolly-shortleaf pine	4,356	9,604	5,440	939	112	...
Loblolly-shortleaf pine-hardwood	2,548	6,776	3,627	964	155	...
All softwood types	3,418	8,259	4,650	956	131	...
Hardwood types:						
Bottomland hardwood	2,474	5,197	3,661	1,073	231	481
Upland hardwood	1,751	5,453	2,614	1,050	...	179
Upland hardwood-pine	1,329	4,570	3,444	882	257	...
All hardwood types	1,978	5,090	3,548	975	237	244
All types	2,877	6,975	4,405	965	181	137

Definition of Terms

Forest Land

Forest land. Land which bears forest growth, or land from which the forest has been removed and which has not been put to other use. Each tract classed as forest is at least one acre in size.

Commercial forest land. Forest land bearing, or capable of bearing, timber of commercial quantity and quality, and not withdrawn from commercial timber use.

Reserved-commercial forest land. Forest land in public parks or preserves which qualifies as commercial forest land except that it is withdrawn from commercial timber use through statute, ordinance, or administrative order.

Tree Species

Softwoods. Loblolly pine (Pinus taeda), shortleaf pine (P. echinata), bald cypress (Taxodium distichum), and eastern redcedar (Juniperus virginiana).

Hardwoods. Broad-leaved species, of which the most numerous groups or species are the white oaks (Quercus, subgenus Leucobalanus), red oaks (subgenus Erythrobalanus), hickories (Carya spp.), sweetgum (Liquidambar styraciflua), and black and tupelo gums (Nyssa spp.).

Forest Type

Forest type is determined only from dominant and codominant growing stock and dominant and codominant smaller sound trees of good form.

Loblolly-shortleaf pine. Stands in which pines comprise at least 75 percent of the trees.

Loblolly-shortleaf pine-hardwood. Stands in which pines comprise at least 25 percent of the trees, but less than 75 percent.

Bottomland hardwood. Stands in which bottomland hardwoods and cypress comprise 76 percent or more of the trees.

Upland hardwood. Stands in which upland hardwoods comprise 76 percent or more of the trees, and no pine is present.

Upland hardwood-pine. Stands in which upland hardwoods comprise 76 percent or more of the trees, and some pine is present.

Class of Timber

Growing stock. Sawlog growing stock is the sawlog portion of sawlog trees. Total growing stock includes sawlog growing stock, and upper stems of softwood sawlog trees and entire stems of cordwood trees to a minimum diameter of 4 inches inside bark.

Sawlog tree. A live, merchantable softwood 9.0 inches or larger in d.b.h., or a live, merchantable hardwood 11.0 inches or larger in d.b.h. To be merchantable, the tree must have at least a merchantable 12-foot butt log or 50 percent of its gross volume in merchantable logs.

Cordwood tree. A live tree 5.0 inches or larger in d.b.h., but smaller than sawlog size, which would become a sawlog tree if it should grow to sawlog size.

Cull tree. A live tree 5.0 inches or larger in d.b.h., which because of decay or sound defect fails to meet the specifications for a cordwood or sawlog tree.

Tops and limbs. Upper stems and limbs of hardwood sawlog trees between the top sawlog and a minimum diameter of 4 inches inside bark.

Stand-size Class

Large saw timber. Stands having a net volume of at least 1,500 board feet per acre in sawlog trees and at least half of this volume in softwoods 15.0 inches d.b.h. and larger, and hardwoods 17.0 inches d.b.h. and larger.

Small saw timber. Stands which do not meet the specifications for large saw timber but which do contain a net volume of at least 1,500 board feet per acre in sawlog trees.

Cordwood. Stands below saw-timber specifications, with at least 10 percent of the growing space occupied by growing stock, and with at least 5 percent of the growing space occupied by cordwood trees.

Seedling and sapling. Stands that do not meet saw-timber and cordwood specifications in which at least 10 percent of the growing space is occupied by growing stock and smaller sound trees of commercial species, and with at least 5 percent of the space occupied by seedlings and saplings.

Denuded. Commercial forest land which does not qualify for any other stand-size class.

Tree Stocking

Degree of stocking is determined by the ratio of the actual number of growing-stock and smaller sound trees of good form in the stand to the number of trees of the same size required to occupy the site fully (for best growth). Under this criterion, stands are well stocked when the percentage of full stocking is 70 or above, medium stocked when the percentage is 40 to 69, poorly stocked when the percentage is 10 to 39, and nonstocked when the percentage is under 10.

Volume and Basal Area

Sawlog volume. Net volume in merchantable sawlogs in sawlog trees, measured by the International 1/4-inch log rule.

Total volume. Volume of sound, usable wood in stems of softwoods and stems and branches of hardwoods between stump and minimum top diameter of 4 inches inside bark, measured in cubic feet.

Basal area. Cross-sectional area of trees at breast height, measured in square feet.

Diameter

D.b.h. (diameter breast high). Tree diameter in inches, outside bark, measured at 4½ feet above ground.

Diameter class. Each 2-inch diameter class includes diameters 1.0 inch below and 0.9 inch above the stated midpoint. E.g., the 12-inch class includes trees 11.0 up to and including 12.9 inches.

Log and Tree Grade

Tree grades for softwoods:

Grade 1 (smooth[1/] trees). Not less than 20 feet of clear bole and at least 40 percent of the merchantable length clear of limbs and knots in sections not less than 8 feet in length.
All cedar sawlog trees were graded as No. 1.

Grade 2 (limby trees). Not less than 12 feet of clear bole and 25 to 39 percent of the merchantable length clear of limbs and knots in sections not less than 8 feet in length.

Grade 3 (rough trees). Merchantable trees below grade-2 specifications.

1/ Except as noted in the case of cedar.

Log grades for hardwoods:[1/]

Grade 1. Smooth, generally clear logs which yield at least one-half of their volume in higher grades of lumber.

Grade 2. Logs of average clearness which yield from one-third to one-half of their volume in higher grades of lumber.

Grade 3. Small logs or logs of less than average clearness which yield less than one-third of their volume in higher grades of lumber, or sound, straight logs with many small defects which make them suitable only for ties and timbers.

Stand Quality

Fair and better. A stand in which grade 2 or better hardwood logs or softwood trees are present.

Poor. A stand in which no grade 2 hardwood logs or softwood trees are present.

1/ For detailed external specifications of log grades used, see "Interim Sawlog Grades for Southern Hardwoods," Southern Forest Experiment Station, 9 pp., January 1948. (Revised).